



Standard Practice for Sampling and Selection of Analytical Techniques for Pesticides and Polychlorinated Biphenyls in Air¹

This standard is issued under the fixed designation D4861; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the sampling of air for a variety of common pesticides and polychlorinated biphenyls (PCBs) and provides guidance on the selection of appropriate analytical measurement methods. Other compounds such as polychlorinated dibenzodioxins/furans, polybrominated biphenyls, polybrominated diphenyl ethers, polycyclic aromatic hydrocarbons, and polychlorinated naphthalenes may be efficiently collected from air by this practice, but guidance on their analytical determination is not covered by this practice.

1.2 A complete listing of pesticides and other semivolatile organic chemicals for which this practice has been tested is shown in **Table 1**.

1.3 This practice is based on the collection of chemicals from air onto polyurethane foam (PUF) or a combination of PUF and granular sorbent.

1.4 This practice is applicable to multicomponent atmospheres, 0.001 to 50- $\mu\text{g}/\text{m}^3$ concentrations, and 4 to 24-h sampling periods. The limit of detection will depend on the nature of the analyte and the length of the sampling period.

1.5 The analytical method(s) recommended will depend on the specific chemical(s) sought, the concentration level, and the degree of specificity required.

1.6 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazards statements, see **10.24** and **A1.1**.

¹ This practice is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.05 on Indoor Air.

Current edition approved March 1, 2011. Published March 2011. Originally approved in 1991. Last previous edition approved in 2005 as D4861 – 05. DOI: 10.1520/D4861-11.

2. Referenced Documents

2.1 ASTM Standards:²

D1193 Specification for Reagent Water

D1356 Terminology Relating to Sampling and Analysis of Atmospheres

D3686 Practice for Sampling Atmospheres to Collect Organic Compound Vapors (Activated Charcoal Tube Adsorption Method)

D3687 Practice for Analysis of Organic Compound Vapors Collected by the Activated Charcoal Tube Adsorption Method

D4185 Practice for Measurement of Metals in Workplace Atmospheres by Flame Atomic Absorption Spectrophotometry

E355 Practice for Gas Chromatography Terms and Relationships

2.2 EPA Methods and Standards:

EPA 600/R-96/010b Compendium of Methods for the Determination to Toxic Organic Compounds in Ambient Air³

EPA 821/C-99-004 Methods and Guidance for Analysis of Water, Versions 2⁴

EPA SW-846 Test Methods for Evaluating Solid Waste Physical Chemical Methods

40 CFR 136 EPA Organic Chemical Analysis of Municipal and Industrial Wastewater⁵

2.3 NIOSH Methods:

NIOSH Manual of Analytical Methods⁶

3. Terminology

3.1 **Definitions**—Refer to Terminology **D1356** and Practice **E355** for definitions of terms used in this practice.

3.2 *Definitions of Terms Specific to This Standard:*

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Also available at <http://www.epa.gov/ttnamti1/files/ambient/airtox/tocomp99.pdf>

⁴ NTIS PB99-500209 (see <http://www.ntis.gov/products/epa-water-methods.aspx>)

⁵ Also available at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr136_main_02.tpl

⁶ Also available at <http://www.cdc.gov/niosh/docs/2003-154/>